

THE FOXES OF BRITISH INDIA.

BY

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(With three text-figures).

In his volume on the *Mammals of British India* Blanford admitted five species of Foxes under the following names:—the Indian Fox (*Vulpes bengalensis*), the Hoary Fox (*V. cana*), the Indian Desert Fox (*V. leucopus*), the Common Fox (*V. alopex*) and the Small Tibetan Fox (*V. ferrilatus*). It cannot be claimed that the popular names were all well chosen. *V. bengalensis*, it is true, may be regarded as the Indian Fox *par excellence* because it is restricted to Hindostan, whereas the others are aliens from the north and north-west and never penetrated far into the country. Moreover *V. bengalensis* lives alongside *V. leucopus* in Rajputana and Sind and in those districts is as deserving of the name 'Indian Desert Fox' as the latter. The name 'Common' was applied to the large Himalayan Fox because Blanford, quite correctly in a sense, thought it was the same as the ordinary European Fox. It is in reality a local race of it and 'Hill Fox' would be a much better term so far as India is concerned. 'Small Tibetan Fox' is also misleading because the species is about as large as the Hill Fox which also occurs in Tibet. It may more appropriately be called the 'Tibetan Desert Fox' because its colouration suggests that environment. As for the 'Hoary Fox' since that epithet is not half so appropriate for this pigmy Afghan fox as for the larger species of that country, I propose to name it 'Blanford's Fox'.

Only two of the scientific names used by Blanford have to be altered. His *V. alopex* becomes *V. vulpes montana*, which expresses the view that the animal is a local race of *V. vulpes* which ranges from Europe through Central and Northern Asia into North America; and his *V. leucopus* becomes *V. vulpes pusilla* because this fox also is nothing but a local race of *V. vulpes*, not a distinct species in the sense that *bengalensis*, *cana* and *ferrilata* are distinct; and also because the name *pusilla* was printed before *leucopus* and therefore has the claim to admission. Thus Blanford's five species are reduced to four; but one of them, namely *V. vulpes*, is represented by three definable local races.

In this, as in other papers of mine, on the *Mammals of British India* published by the Bombay Natural History Society I have made as much use as space permits of the very valuable and instructive details regarding dates, measurements and so forth contained on the labels of the splendid collection of skins procured

by the 'Mammal Survey' of British India organised by the Society. Similarly detailed dimensions of a considerable number of the skulls are given to show their variations. It may be thought that the tables of measurements are unnecessarily long; but nothing is more irritating and unsatisfactory in systematic descriptions than such general statements as that one species, or race, differs from another by having a larger or smaller skull or teeth, without the addition of actual measurements to show the points. Tables also have the advantage of showing at a glance the very considerable individual variation of foxes from the same locality and obviously belonging to the same race. Similar variations in the skulls and teeth in foxes from different localities have been used for the establishment of distinct species and races.

Genus: VULPES, Oken.

Vulpes Oken, *Lehrb. Naturg.* iii, pt. II, pp. 1033-4 (1816); Miller, *Cat. Mamm. Centr. Europe*, p. 325 (1912).

Type of the genus: *Canis vulpes* Linn.

Distribution: The greater part of the old world, except Madagascar, S.-E. Asia and Australasia, and of N. America as far south as Mexico.

Distinguished from *Canis* and *Cuon*, the other genera of *Canidae* inhabiting British India by having the forehead of the skull between the postorbital processes flat, not inflated by air-cells, the processes themselves slightly concave, with raised anterior edge, instead of convexly rounded, and the canine teeth typically longer, the upper with their points reaching as low as the inferior margin of the mandible, and the points of the lower reaching well above the line of insertion of the upper incisors.

Key to the Species based on external characters.

- A. Tail and ear long, tail over half the length of the head and body, ear much more than half the length of the hind foot.
 - 1. Tip of the tail white; upper half of back of ear black and strongly contrasted with tint of head and nape (four pairs of mammae) *vulpes*.
 - 2. Tip of the tail black; backs of the ears generally nearly the same tint as the head and nape, never jet black and strongly contrasted.
 - a. Larger; coat never very long and full; colour brownish or ochreous on the back, the contour hairs always with pale band giving a speckled look to the pelage (three pairs of mammae) *bengalensis*.
 - b. Smaller; coat very long, full and loose; the contour hairs extensively white and black so that the pelage is never closely speckled *cana*.
- B. Tail and ear short, tail less than half the length of the head and body; ear less than half the length of the hind foot *ferrilata*.

Key to the Species based on the skull and teeth.

- A. Muzzle comparatively short and broad, its width above pm^2 about one-third the length of the palate; canines moderately long, height of upper from base to point less than combined lengths of upper carnassial (pm^4) and first molar (m^1) as set in jaw.
 - 1. Nasals on the average narrower posteriorly; the upper carnassial relatively larger as compared with the first molar.
 - a. Skull in smallest ♀ over 100 mm. in condylo-basal length *vulpes*.
 - b. Skull in adult ♂ up to about 90 mm. *cana*.

2. Nasals on the average broader posteriorly and upper carnassial smaller as compared with first upper molar *bengalensis*.
- B. Muzzle long with concave lateral margins, its width above pm^2 about one-quarter the length of the palate; canines very long, height of upper exceeding combined lengths of pm^4 and m^1 *ferrilata*.

Vulpes vulpes, Linn.

Canis vulpes Linn., *Syst. Nat.*, ed. 10, vol. i, p. 40 (1758). [For descriptions and full synonymy of typical *Vulpes vulpes* from Sweden and of related European forms, see Miller, *Cat. Mamm. Western Europe*, pp. 330-40 (1912).]

Locality of the type: Sweden.

Distribution: Europe from the Arctic coast to the Mediterranean and Africa north of the Sahara; Asia from the far north to S. Arabia, N.-W. India, the Himalayas, S. China and Tonquin and the greater part of N. America from the Arctic coast southwards to California. Absent from the greater part of Peninsular India, Ceylon, Burma, Malaya, Siam, Sumatra, Java and Borneo.

The range agrees on the whole very closely with that of the Wolf (*Canis lupus*) and of the Bear (*Ursus arctos*), but is more extensive at all events to the south.

Distinguished by the combination of black backs to the ears and a white tip to the tail; although commonly called the 'red-fox', on account of the dominance of that tint, the colour is very variable both individually and locally, the contour hairs of the back being sometimes flavescent, 'silvery' or black to a varying extent. The size is also variable. Although typically considerably exceeding on the average that of other species, some of the sub-species are comparatively small. Usually at all events there are four pairs of mammae in the ♀.

Vulpes vulpes montana, Pearson.

THE HILL FOX.

'The Hill Fox' Royle, *Journ., As. Soc. Beng.*, vol. i, p. 99 (1832).

Canis vulpes montana Pearson, *Journ., As. Soc. Beng.*, vol. v, p. 313 (January 1836).

Canis himalaicus Ogilby, *Proc. Zool. Soc.*, p. 103 (October 1836); and in Royle's *Botany of the Himalayas*, *Mamm.*, p. lxxvi (1839).

Vulpes nepalensis Gray, *Charlesw. Mag. Nat. Hist.*, vol. i, p. 573 (1837).

Vulpes alopeax Blanford, *Mamm. Brit. India*, p. 153 (1881).

Vulpes vulpes waddelli Bonhote, *Proc. Zool. Soc.*, p. 303 (1906).

Vulpes ladacensis Matschie, *Filchner's Exped. Chin.*, p. 167 (1907).

Locality of the type of *montana*, 'Himalayas'; of *himalaicus*, Mussoorie; of *nepalensis*, Nepal; of *waddelli*, Kambajong, Tibet; of *ladacensis*, Ladakh.

Distribution: Himalayas from Gilgit eastward to Sikhim; Tibet and Yunnan.

Distinguished from the typical Scandinavian race and the other races of Continental Europe admitted by Miller by its smaller size on the average, especially indicated by the skull and teeth (see p. 42).

Notes on the synonymy: The type of *montana*,¹ of which the exact locality is unknown, was described as having a dark rufous cross on the back set off by light fawn on the neck and behind the shoulders; the sides of the body and the shoulders being grizzled and the underside dark. Blyth, who had Pearson's type and stated that the fox occurs at Simla and Mussoorie, described it as much less rufous than the European fox and paler and more hoary [*Journ., As. Soc. Beng.*, vol. xxiii, p. 730 (1854)]. He also astutely suggested that it might prove to be the same as the large fox of Afghanistan

¹ Wrongly stated by Mivart [*Mon. Canidae*, p. 96 (1890)] to be in the British Museum.

described by Griffith. From the description it appears that this fox comes between the 'red' and the 'hoary' types since it agrees tolerably closely with skins from Kangra, Chamba and Simla referred to below.

The type of *himalaicus*, from Mussoorie, was described as bright bay on the back, yellowish on the sides of the body, white on the side of the neck, hoary grey on the hips and smoky brown below. Ogilby's type, which is in the British Museum, is now tawny red above, with hardly a trace of black, but with some buffy white on the loins, isabelline on the flanks, silvered and hoary on the thighs, sooty below, set off by bright buff on the chest. Although both Ogilby and Blyth considered *himalaicus* to be a synonym of *montanus*, the two types do not agree in colouration, *himalaicus* being the first category mentioned below.

The type of *nepalensis*, one of Hardwicke's Nepalese specimens of which the whereabouts is unknown, was described as bright fulvous yellow above, like the English fox but with the fur brighter and much softer. According to Blyth [*Journ., As. Soc. Beng.*, vol. xxiii, p. 730 (1854)] this is a large fox with very fine, long, dense fur, bright light yellowish fulvous in colour and with a huge brush. According to him it occurs in Tibet, rarely south of the snows. Possibly Hardwicke's specimen was a traded skin; but the description agrees very closely not only with some Tibetan skins in the British Museum but with one from Sikhim and some from Kumaon as stated below.

The type of *waddelli*, from Kambajong, Tibet, 16,400 ft., was regarded by Bonhote as distinct from *montana* because it represented a redder type than any of the Himalayan skins in the British Museum at that time. It is not redder, however, than skins from Sikhim, Kumaon and elsewhere subsequently received.

The name *ladacensis* was given by Matschie to a skin from Ladakh which he thought was specifically identical with the paler of the two foxes collected by Stolicka in Turkestan and illustrated by Blanford (Fig. 1, Pl. II) in the report on the Second Yarkand Mission, 1891. Matschie was apparently quite unaware of the individual variation in the colour of foxes. There is no doubt that the two foxes depicted on the plate by Blanford merely represented colour phases of one and the same subspecies, comparable with 'red' and 'flavescent' phases of *montana* from Kumaon, Sikhim and Tibet, although Matschie regarded them as specifically distinct. I have seen no foxes from Ladakh, but one from Gilgit, in the same river valley, is inseparable from *montana*.

The British Museum has the following Himalayan skins:—

Sikhim, Kapup, 13,000 ft., Ad. ♂ (Crump coll.), November 24th, in fresh winter coat is bright reddish bay from nape to loins with scarcely any black or buff or grey areas in the contour hairs, but the forehead and cheeks have a good deal of whitish; the thighs are hoary grey, the underside white, the top of the tail red, and the fore legs darkish tawny, with a grizzled black streak to wrist; hind legs paler.

Sikhim, Thanga, in the Upper Chambi Valley, 11,000 ft., Ad. ♀ (Crump coll.), January 4th, in mid-winter coat, is much paler and yellower, the contour hairs bleached to buff on the back, the bright tint being restricted to the back, with the flanks greyish; the fore legs also are much paler; the underside is white.

Tibet, Kambajong, 16,400 ft., Ad. ♂, Oct. 8th (type of *waddelli*), is very like the Kapup skin, but has the contour hairs on the flanks paler. A second skin named *waddelli* by Bonhote, from Pharijong, January 11th, is like the Upper Chambi skin, but rather brighter. Two undated skins labelled Tibet (Hodgson) are also a little brighter and more golden than the Chambi skin, the three being intermediate between the two skins assigned to *waddelli*. An adult ♂ from Dachin, Tibet, 14,700 ft. (Col. Bailey), June 22nd, is in full moult, all the contour hairs of the back being shed, leaving a thick coating of tufted dark, chocolate wool. Another ad. ♂ from Gyantse, 13,000 ft. also from Col. Bailey, undated, is in much the same condition but a few contour hairs, with the tips bleached white, dead and shrivelled, remain.

All these skins are white-bellied. The redder of them belong to the phase represented by the type of *himalaicus* and the paler agree precisely with Gray's description of *nepalensis*.

No fox of this type has been recorded from Bhotan, Assam or Upper Burma; but it occurs in Yunnan, whence the Museum has two skins, both from Tengyueh, an adult ♀, 9,000 ft. (Howell), February 11th, which is an almost exact match of the skin from Kapup in Sikhim; and an ad. ♂, 6,000-7,000 ft. (Forrest), dated December 24th, but almost certainly wrongly, because the whole of the back behind the shoulders is covered with brown wool with a few white-bleached contours, as in Col. Bailey's Tibetan skins; but the nape and shoulders still retain the long fluffy contours, resembling in colour the paler skins of the *nepalensis* type from Tibet and Sikhim.

Kumaon: A series of six skins (Crump) closely resembles those described above. The extremes in colour are an ad. ♂ from Lohaghat in Almora, 5,600 ft., February 6th, which is dark reddish bay above from the head to the tail-root as in the skin from Kapup, Sikhim, but there are some black tipped hairs on the nape and shoulders and the belly is mostly blackish; and an ad. ♀ from Champawat in Almora, 5,850 ft., February 21st, which is much paler, with the general colour above buffy yellow, the fur of the back grey-brown, instead of sooty and the throat and chin and greater part of the belly white, with some dark grey on the chest. A second from Lohaghat closely matches the Champawat ♀. Two ad. ♂ skins from Takula, 5,350 ft., October 12th and 15th, are like the first described ♂ from Lohaghat, whereas a ♀ from Takula, October 12th, is paler, intermediate between the ♂ Takula skins and the pale ♀ from Champawat.

These skins also exhibit the colour phases represented by the types of *himalaicus* and *nepalensis* respectively.

Mussoorie: In addition to the type of *himalaicus* above described the Museum has another skin 5,500 ft. (Hutton) which is very like it, but has more white banding in the contour hairs of the hind quarters, and is white below in the middle line instead of slate grey.

Simla: A series of four skins (Hume) shows great individual variation. Two, ♂, ♀, closely resemble the Mussoorie skins, another ♀, September 28th, is much darker, all the hairs of the dorsal surface being black-tipped and buff below the tip, the general effect being grizzled brown from the crown backwards. Another ♀, September 26th, is still darker than the last, the pale areas of the contour hairs being much less evident, especially on the nape and shoulders, which are heavily blackened; the underside is sooty and the legs are very dark. The general effect is a blackish fox, speckled with buff or grey, with a brighter buffy cross-mark down the spine and across the shoulders. Another ♀ skin (Blanford), October, is short coated and marked above with a dark rusty red cross showing no buff or black speckling; the thighs and fore legs are blackish speckled with white. This skin of Blanford's agrees very closely with the type of *montana* as described by Pearson, but neither appears to be in complete coat, judging from the distinctness of the 'dark rufous' cross mark on the back; and it is evident from Blyth's description of the foxes from Simla and Mussoorie that the skins he saw and described as much less rufous, paler and more hoary than European foxes, belonged to the type prevalent at Kangra and Chamba.

Kangra Valley: Four skins (Wells coll.) in good coat are of the 'crossed or decussate', hoary type with the bright colouring reduced on the back and the contour hairs marked with a broad whitish band and a black tip, the black often dominant. Ad. ♂ from Gopalpur, 6,000 ft., February 29th, is dark reddish tan down the back with abundance of black but not much of the pale tint; flanks grey; thighs and shoulders hoary; underside smoke-grey; fore legs dark hoary, with dark tan paws; hind dark tan with dark hoary patch. A second ad. ♂ from the same locality, 5,600 ft., February 18th, is a good deal paler above than the last, but has more black on the limbs. Ad. ♀ from Sanyala, 4,500 ft. May 8th, is still paler, yellowish down the back, with the dark hair-tips scarcely evident, but the thighs and sides of the shoulders hoary, the throat sooty and the abdomen covered with short red hairs in preparation for suckling. An undated skin from Baijnath is very dark with a dull ochreous tint in the dorsal contour hairs and the fur nearly black.

Chamba: A series of nine skins collected by Wells in December and January between 4,000 and 5,000 ft. Two only, one from Pukri, 4,000 ft., and another from Bara Tissa, 7,500 ft., are of the reddish type like the richer skins from Kumaon. The rest from Pukri, Bara Tissa, Chalan Tissa,

6,700 ft., Chattri, 5,000 ft., and Siluni, 5,000 ft., are darker with the bright colour on the back not so red, but varying from ochreous to reddish brown and more restricted, forming a broad band or cross, more or less obscured by the black tips of the hairs; the thighs, flanks and sides of the shoulders hoary. These are like the dark Kangra skins.

Gilgit: Two skins of the red and paler phases, like those of Tibet, Sikhim and Kumaon. One 5,000 ft. (Biddulph), October 7th, in fresh winter coat has the contour hairs of the back tolerably uniformly red without appreciable pale areas or black tips; the underside has the throat ashy, the abdomen ashy overcast with white and the inguinal region white; the legs have some black and white hairs on their front surfaces. The second, 6,000 ft. (Major W. F. R. Trevelyan), is in full moult, most of the contour hairs being shed, leaving the woolly coat exposed. The coloured area of the back is reduced in extent and not so red as in Biddulph's skin, the general tint being faded to bright ochreous, with the head still paler; the rest of the upper side is covered with thick tufted wool, white on the sides of the neck and flanks, pale sooty on the hind back; the under side is ashy; the legs are more heavily pigmented in front than in Biddulph's skin and the tail is mostly covered with white wool.

From the evidence of the skins, mainly collected by the Mammal Survey, it seems that the Hill Fox undergoes remarkable change in colour when traced westwards through the Himalayas from Tibet and Sikhim. The eastern form varies from bright reddish bay to bright yellowish fulvous, with scarcely a trace of black and very little silvery white in the pelage. The reddish phase was named *himalaica* and the fulvous or flavescent *nepalensis*. These are the only phases hitherto recorded from Sikhim and Kumaon. But the red phase also occurs in Mussoorie, Chamba and Kangra. In these districts, however, the 'hoary' phase, described as *montana*, and distinguished by the reduction of the bright hue of the back and by the generally black and white colouration of the contour hairs of the flanks and elsewhere, is prevalent. These may prove to represent distinct races, *himalaica* and *montana*, but for the present I prefer to regard them as one, since in N. America the 'red', the 'hoary' and the 'black' or silver-tip phases occur in the same locality. But I have given racial status to a still more hoary form found to the west of Chamba and Kangra and typified by a fox originally recorded from Kandahar and named *griffithii*.

The following are the flesh-measurements converted from millimetres into English inches and some weights of the largest and smallest males and females of *montana* from each district:—

...	Head and Body	Tail	Hind foot	Weight
Sikhim, Kapup ... ad♂	27 $\frac{1}{2}$	17 $\frac{4}{8}$	6 $\frac{3}{8}$...
,, Thanga ... ad♀	24 $\frac{3}{8}$	15 $\frac{3}{8}$	6	8 $\frac{3}{4}$ lbs.
Kumaon, Almora ... ad♂	25	16 $\frac{4}{8}$	6	10 $\frac{1}{2}$,,
,, Takula ... ad♂	22 $\frac{4}{8}$	17 $\frac{1}{2}$	(4-)	10 $\frac{1}{2}$,,
,, " ... ad♀	23 $\frac{1}{8}$	15 $\frac{4}{8}$	5 $\frac{3}{8}$	8 $\frac{1}{2}$,,
,, Almora ... ad♀	22 $\frac{3}{8}$	14	5 $\frac{3}{8}$	8 ,,
Kangra, Gopalpur ... ad♂	28	18	6	...
,, " ... ad♂	26 $\frac{4}{8}$	17 $\frac{4}{8}$	5 $\frac{4}{8}$	11 $\frac{1}{4}$ lbs.
,, Samyala ... ad♀	24 $\frac{4}{8}$	13 $\frac{3}{8}$	5 $\frac{3}{8}$	8 ,,
Chamba, Pukri ... ad♂	29 $\frac{3}{8}$	18	6	...
,, Bara Tissa ... ad♂	26	14 $\frac{4}{8}$	5 $\frac{3}{8}$...
,, Chalan Tissa ... ad♀	26	13 $\frac{3}{8}$	5	...
,, " " ad♀	25 $\frac{1}{2}$	16 $\frac{1}{2}$	5 $\frac{4}{8}$	8 lbs.

The ear is usually about 3 $\frac{1}{2}$ in. long, measured from the notch, but may be 4 in. (100 mm.).

The table suggests that the foxes from Kangra and Chamba are bigger, sex for sex, than those from Kumaon, but since this is not borne out by the skulls the apparent difference is probably due to the 'personal equation' of the collectors, Wells and Crump, respectively.

Of the measured Tibetan skins Col. Bailey's ad. ♂ from Dachin and the type of *waddelli* from Kambajong have a head and body measurement of 26½ in. and 25 in. respectively; and the ♂ and ♀ skins from the Tengyueh Valley in Yunnan are exactly the same in head and body as the ♂ and ♀ from Sikhim. The tails and hind feet of these Tibetan and Yunnan skins similarly agree very closely with those of the Sikhim and Kumaon skins.

From the available data it does not appear that the flesh-measurements of this fox are appreciably less than those of the Continental European foxes, although the skulls as recorded below are decidedly smaller.

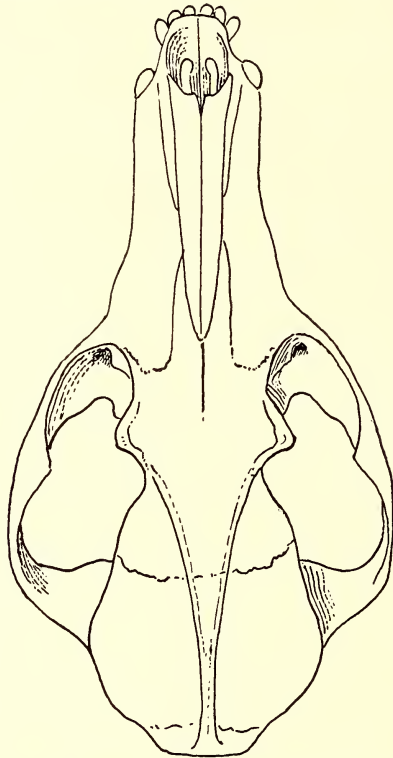


Fig 1.—Skull of ad. ♂ of *Vulpes vulpes montana* from Takula, Kumaon, ×¼

Skulls of *montana*, sex for sex, are smaller on the average than those of the three British and Continental European races of *V. vulpes*, admitted by Miller, namely *V. v. vulpes* from Scandinavia, *V. v. crucigera* from Central Europe and Italy and *V. v. silacea* from Spain which are closely related. In ♂ skulls of *montana* the condylobasal length varies from 128 to 141 mm. with an average of about 136 mm., the same measurement for ♀ skulls being from 123 to 132 mm. and the average about 130 mm. In the European races ♂ skulls range from 136 to 155 mm., with an average of about 145 mm., and ♀ skulls from 126 to 141 mm. with an average of about 134 mm. The teeth also of *montana* appear to be similarly a little smaller, especially the upper carnassial (*pm*⁴).

In the table of skull measurements of this race (p. 45) the zygomatic and the postorbital, or 'waist', widths are entered because it is customary to

record them. They are, however, of very little use because they vary with age after the skull has attained its full length, the zygomata becoming wider and the postorbital area narrower from muscular moulding as the skull gets older.¹

The two skulls from Simla, which have no skins, were collected by B. B. Osmaston. It may be added that the two unsexed skulls of Bailey's Tibetan specimens, above referred to, have a condylobasal length of 134 and 139 mm. respectively, that the adult ♂ skull of the type of *waddelli* is 136 mm. and the ad. ♂ and ♀ skull from the Tengyueh Valley in Western Yunnan are respectively 139 and 130 mm. with a mandibular length of 110 and 104 mm. All these skulls fit in with the Himalayan series of *montana*. Finally the skull belonging to the skin collected by Biddulph at Gilgit, although immature and defective, has the upper carnassial (pm^4) and the upper molar (m^1) the same size as in *montana*.

***Vulpes vulpes griffithii*, Blyth.**

Vulpes flavescens Hutton, *Journ., As. Soc. Beng.*, vol. xiv, p. 344 (1845), (with descriptive note by Blyth); Blyth, *Journ., As. Soc. Beng.*, vol. xxii, p. 581 (1853), (not *flavescens* Gray).

Vulpes griffithii Blyth, *Journ., As. Soc. Beng.*, vol. xxiii, p. 730 (1854); Scully, *Ann. Mag. Nat. Hist.* (5), vol. viii, p. 226 (1881).

Locality of the type: Kandahar in Afghanistan.

Distribution: Southern Afghanistan, Waziristan and Murree.

A trifle smaller on the average, judging from the few available skins, than *montana*, and, although exhibiting the red phase, typically extensively hoary and silvered with the brighter tint reduced to a wash of pale ochreous forming a narrow band down the back, considerably paler and less extensive than in the Chamba skins of *montana*, but intergrading with the latter and also with the next race *pusilla* both in the Punjab and Baluchistan.

Hutton, who was the first to give an account of this fox, said:—'The fox of Afghanistan, or at least of the southern and western parts, is apparently the same as our Himalayan species, though somewhat less in size. . . It is common in the valleys round Kandahar hiding in burrows and holes, in rocks'. He gives, however, measurements of two ♀ specimens which show equality in size to ♀ *montana*. In a note to Hutton's account, Blyth, to whom Hutton sent the type, quoted Griffith's statement that 'a large and small species of fox appear to exist in Afghanistan. The former perhaps is the same as the Large Himalayan Fox found at Quetta and Olipore. The small seems to resemble the fox of the plains of India.' Blyth, quite wrongly, I think, identified Hutton's specimen, for which he adopted the name *flavescens*, as the Small Afghan Fox described by Griffith;² but he described it as having 'the longer hairs black-tipped, yellowish white along the back, white on the sides, the face fulvous with a blackish patch on the muzzle, the fore leg blackish in front, the hind paw with a blackish spot above and the under side dusky.' In the following year he named this fox *griffithii*. Later Scully repeated the information supplied by Hutton³ and Blyth about the fox and gave some measurements of a skull from Kandahar which he referred to *montana*.

¹ Here and elsewhere in this paper the maxillary width is the width of the muzzle above the root of the canines; the upper cheek teeth are measured from the crown of the last tooth (m^2) to that of the canine; the mandible from the condyle to the sockets of the incisors; the upper carnassial (pm^4) and the first molar (m^1) along their outer margins and the lower carnassial (m_1) along its middle line.

² This was no doubt the species subsequently named *Vulpes cana* by Blanford (see below, p. 53).

³ The length of the tail given by Hutton as 17 in. was misquoted, or misprinted, by Scully as 27 in.

Blanford, misled by Blyth's identification of Hutton's Small Kandahar Fox as *griffithii*, wrongly identified the latter as *leucopus* (= *pusilla*).

The British Museum has the following skins:—

Wano in Wazaristan near the Afghan-Baluchi border. A young ad. ♂ (W. B. Cotton), December 19th, has a faint ochreous wash from the nape forming a narrow band down the back but scarcely traceable on the loins; the head and face are tan with a conspicuous black patch on the muzzle; the fore legs are tan with some grey down the front and a pale grey patch on the paws; the hind legs cream-buff with no black and the whole of the under side is sooty. This specimen agrees very closely with Blyth's description of the type of *griffithii*.

Gharial in the Upper Punjab, near Murree, 7,000 ft. An ad. ♀ (Major Dunn), July 27th, differs from the last in having a lighter muzzle patch, the hairs of the crown more bleached and worn and the ochreous wash only traceable behind the shoulders but stronger on the loins than in the Wazaristan skin; the black is more dominant on the nape and shoulders which are blacker than the hoary flanks; the fore legs are deep tan with a conspicuous blackish grey streak down the front; the hind whitish below the hocks in front with some infuscation and the abdomen, covered with short new hair, is white, the chin also is white but some old hair adhering to the throat and the chest is smoky grey.

Kotli in the Murree Hills, 5,800 ft. (Wells). An ad. ♂, June 19th, is changing coat, with some long contour hairs, retained on the back, dark tipped, with white, or on the back buffy, subterminal band; but wherever the new coat is exposed above, i.e. on the head, thighs, back etc., it is ochreous whereas on the chest and belly it is white; the legs are as in the Gharial skin, but there is practically no bright colour on the tail above except at the base. The appearance of this skin suggests that, with the moult completed, it would be indistinguishable from the skins in summer coat of the two examples of the next race, *pusilla*, collected at Ava in the Salt Range by Col. Stockley.

Murree, 7,000 ft. (Dr. J. E. T. Aitcheson). An ad. ♂ resembles the Sikhim and Kumaon and a few of the Chamba skins in exhibiting the red phase of colouration.

The only available flesh measurements, in English inches, are the following:—

		Head and Body	Tail	Hind foot
Murree Hills, Kotli	yg. ad. ♂	23 $\frac{3}{8}$	17 $\frac{1}{8}$	5 $\frac{3}{8}$
Gharial near Murree	ad. ♀	23	15	5 $\frac{3}{8}$
Kandahar (Hutton)	ad. ♀	24	17	...

These data are too scanty to establish definite conclusions. They merely suggest that *griffithii* is on the average smaller than *montana*, sex for sex.

The first skull of *griffithii* in the table was collected by Swinhoe and is marked 'Scully', indicating that it is the one above referred to of which Scully published some measurements, namely the condylobasal length, the zygomatic width, the length of the mandible and the three teeth. My measurements agree very closely with his, except in the condylobasal length, which he entered as 139 mm. This was no doubt a misprint. At all events a skull of that length would have had a mandible exceeding 100 mm. The second Kandahar skull was presented by Blanford. The third was another of Swinhoe's. Their dimensions are inserted to show their general agreement with the skulls from the Murree Hills and Wazaristan. The second ad. ♂ skull from the Murree Hills belongs to the skin in the red phase collected by Aitcheson. It is smaller than the smallest of the ♂ skulls of *montana*.

An interesting point is the exceptional size of the teeth in the first skull. They are equal to the teeth of a considerably larger race of fox found in Western Turkestan, the Altai and near Lake Baikal, which I identify as *berngiana*, and are larger than in *montana*, although the teeth of the remaining six skulls of *griffithii* are on the average smaller than in *montana*.

CRANIAL AND DENTAL MEASUREMENTS OF THE LARGEST AND SMALLEST ♂ AND ♀ SKULLS OF *V. V. MONTANA* AND *GRIFFITHII* ARRANGED ACCORDING TO LOCALITY.

LOCALITY AND SEX		Cond. Bas. Length	Zygom. Width	Postorb. Width	Int. Orb. Width.	Max. Width	Upper Cheek Teeth	Mand. Length	<i>pm</i> ⁴	<i>m</i> ¹	<i>m</i> ₁
<i>montana</i>											
Sikhim, Kapup yg.	ad. ♂	139	72	23	26	24	65	110	13	9 $\frac{1}{3}$	15
"	Thana old ♀	131	73	23	27	22	62	102 +	12	9	14 +
Kumaon, Takula	ad. ♂	141	76	21	27	22 $\frac{1}{2}$	66	108	13	8 $\frac{1}{2}$	15
"	" ad. ♂	129	74	21	27	22	60	100	12	9	13 $\frac{1}{2}$
"	" ad. ♀	132	72	21	25	20	62	103	12	9	14 $\frac{1}{2}$
"	Almora ad. ♀	129	69	20	25	21	61	100	12	9	14
Simla, Dagshai	ad. ♂	135	75	22 $\frac{1}{2}$	26	23	64	104	12	10	16 -
"	Chakrata ad. ♀	132	74	23	26	23	61	100	12 $\frac{1}{2}$	9 $\frac{1}{2}$	14
Kangra	old ♂	140	78	20	27	24	65	110	13	9	14
"	ad. ♂	134	75	23	28 $\frac{1}{2}$	24	64	103	12	9	13
"	oldish ♀	127	71	19	24	20	60	98	12	10	14
Chamba, Pukri	ad. ♂	137	77	20	29	24	64	108	13 -	10 -	15
"	Bara Tissa ad. ♂	128	71	23	26	20	60	96	12	9	14
"	Chalan Tissa ad. ♀	130	74	20	27	22	60	101	12	9 $\frac{1}{2}$	14 $\frac{1}{2}$
"	Charan Tissa ad. ♀	123	69	24	23	19	56	93	12	9 $\frac{1}{2}$	14
<i>griffithii</i>											
Kandahar	ad. ? ♂	132	69	22	23	21 $\frac{1}{2}$	62	100	14	10 $\frac{1}{3}$	16
"	ad. ? ♂	127	65	17	23	19	59	94	12	9	14
"	ad. ? ♀	124	65	18	22	19 -	57	94	12 +	8	14
Wazaristan, Wano	yg. ad. ♂	127	67	23	24	21	58	96	12	9 $\frac{1}{3}$	14
Murree Hills, Kotli	ad. ♂	127	72	22	26	21	59	99	12	9	14
"	" ad. ♂	125	72	22	25	21	60	90	12	9 -	14
"	" Gharial ad. ♀	125	72	20 $\frac{1}{2}$	26	21	58	99	11	8 $\frac{1}{2}$	13

***Vulpes vulpes pusilla*, Blyth.**

Vulpes flavescens, Blyth, *Journ., As. Soc. Beng.*, vol. xxii, p. 581 (1853); Gray, *Proc. Zool. Soc.* p. 517 (1868), (not *flavescens* Gray, 1843).¹

Vulpes pusillus, Blyth, *Journ., As. Soc. Beng.*, vol. xxiii, p. 729 (1854).

Vulpes leucopus, Blyth, *Journ., As. Soc. Beng.*, vol. xxiii, p. 729 (1854); and vol. xxv, p. 443 (1856); Blandford, *Mamm. Brit. Ind.*, p. 151 (1888), and of subsequent authors.

Vulpes persica, Blandford, *Ann. Mag. Nat. Hist.* (4), vol. xvi, p. 310 (1875); *Zool. of Eastern Persia*, p. 39, pl. 2 (1876).

Locality of the type of *pusilla*, the Salt Range; of *leucopus*, Moultan; of *persica*, Shiraz.

¹ *Vulpes vulpes flavescens*, a name which figures in the bibliography of Indian foxes, is a fox from N. Persia as large as *montana* and related to it. It occurs in two colour phases, the typical 'flavescens' and the 'red'. The latter was named *splendens* by Thomas. That at least is my interpretation of *splendens*.

Distribution: Throughout the more or less desert districts of N.-W. India from Rawalpindi to Rajputana, Sind and Cutch and through Southern Baluchistan to Southern Persia and Mesopotamia.

Size very variable but considerably smaller, sex for sex, than *montana* and a little smaller than *griffithii*; general colouration very uniform, apart from seasonal changes, throughout the vast range of the race, never exhibiting the 'red' phase in the winter coat, not very different from some skins of the 'flavescent' type of *montana*, but much less black than the dark Kangra and Chamba skins of that race and never so silvered and hoary as in typical *griffithii* and with the ochreous or buffy hue of the dorsal side much more extensive. The seasonal changes in colour are very marked as described below in the case of the Salt Range skins; but, in addition, when the coloured contour hairs are first shed the tint of the back may be dark greyish brown.

In his first reference to this fox as *flavescens* from the Salt Range, Blyth described it as 'much brighter than Afghan skins, tints purer more contrasted, legs paler, redder, less black than *montana*'. A year later, when he named it *pusillus*, he said that it nearly resembles *montana* but is smaller. The name *pusillus* has line priority over *leucopus* and, according to the rules of nomenclature, should be preferred.

In his description of *leucopus* Blyth quoted Elphinstone's observation that the fox of the Western Hurriana desert is smaller than our fox (*montana*) and in one part of the desert has the legs and belly black, in another white. Blyth based his species *leucopus* on a specimen from Moultan which he described as smaller than *pusillus*, light fulvous on the head and back, variegated with black and white, the cheeks, sides of the neck, flanks the inside and mostly the front of the limbs being white. Two years later he referred to the same species specimens from Hansi and Hissar, from a spot between Indiana and Ferozapore and from Cutch. The specimen from Hansi had the belly black and the legs dark, showing Blyth the inappropriateness of the name *leucopus*.

The opinion expressed by Adams [*Proc. Zool. Soc.* (1858), p. 516] that *leucopus* would turn out to be the same as *pusillus* was adopted by Blanford, who unfortunately chose the inadmissible name *leucopus*, giving it full specific rank. Mivart [*Mon. Canidae* (1890), p. 123] followed Blanford in this respect; but he was the first to detect that Blanford's *persicus* is a synonym of *leucopus*, although he quite failed to see the close kinship between *leucopus* and typical *Vulpes vulpes* and wrongly affiliated it with *V. corsac* of Central Asia, which is related to *bengalensis*. With far more material than other authors were able to examine, I have been unable to distinguish *leucopus* from *pusilla*. I have not, however, seen topotypes of *leucopus* from Moultan. But specimens from Hissar which Blyth referred to *leucopus* are inseparable from specimens from the Salt Range, the type-locality of *pusilla*. Nevertheless as the table of measurements shows, the skulls of Sind specimens appear smaller on the average than those from the Upper Punjab. I believe the differences to be merely individual. At all events the evidence that these small specimens represent *leucopus* is quite inconclusive and the intergradation is complete.

It is needless to attempt to describe in detail the very large number of skins, in the British Museum, which I assign to this race. A few will serve to illustrate the individual and seasonal differences.

Bhattu in Hissar, 6,000 ft. (Col. Stockley), November 12th. Two skins ♂, ♀ in new winter coat are tolerably uniformly rich ochreous, spangled with whitish above; flanks whitish; thighs externally and lower shoulders hoary, the contour hairs showing a white band with a black tip; tail ochreous above with black tipped hairs; fore leg dark, brownish to nearly black, with the toes paler; hind leg below hock white in front, with a dark spot on the paw; under side ashy grey, with the chin white.

Ara in the Salt Range, 2,300 ft. Two later skins (Wells), March 26th, ♀, resemble the skins from Hissar, but a ♂, March 23rd, is much less well coloured above the tint being apparently faded with the close of the winter. An adult ♂, ♀, 3,800 ft. (Stockley), July 27th, in summer coat, are very different. In the ♀ the moult is not quite complete, the ochreous-brown tint of the new hair of the back being partially obscured by old deep brown long hair, the new coat of the under side is white, but some old dusky hair is retained on the throat; the fore legs are tan, grizzled down the front; the hind legs are paler. In the ♂ the moult is completed, the colour

above being ochreous brown, the flanks grey, the under side white as in the new coat of the ♀, but the feet are much darker.

Chakdulla, Campbellpore, 2,000 ft., in the Attock district of the Upper Punjab (Stockley). A young ad. ♀, November 17th, closely resembles the Hissar series, but is not so hoary on the shoulders and thighs and has the fore legs pale yellowish brown, the hind legs nearly the same and not strongly contrasted with the fore legs as in the Hissar skins. This skin and a ♀ from Potwar W. of Rawalpindi (Bingham), February, which is rather duller in hue, both from the extreme northern part of the range of *pusilla* in the Punjab, differ strikingly in colour from the skins identified as *griffithii* from higher altitudes in the Murrie Hills a few miles to the east and north-east.

Numerous skins from the following, amongst other localities, differ to a certain extent individually in the coloration of the upper and undersides and of the limbs and often considerably in accordance with the moult, but are indistinguishable as a whole from those above described from farther north.

Kashmor, Mirpur, Khairpur in Upper Sind, on the right and left banks of the Indus (Prater); Thar and Parker, Southern Sind; Bhuj and Nokania in Cutch (Crump); Jodhpur and Sambhar in Rajputana (Adams and Hume). Also a large number of skins collected by Sir J. E. B. Hotson at or near Khozdar and Turbat and Panjgur in Southern Baluchistan are indistinguishable from Indian skins; and the same is true of S. Persian skins, the type and topotypes of *persica* Bl. from Shiraz, one from Chahanbar on the Persian Gulf (Hotson), one from the Karun River, identified by Thomas as *flavescens* (see below), three from Baghdad (Cox and Cheesman) and one from Ctesiphon on the Tigris (Christy).

The following are the flesh measurements in English inches of the largest and smallest ♂ and ♀ examples from the principal districts arranged roughly geographically from north to south and westward:—

		Head and Body	Tail	Hind foot
Attock, Campbellpore ;	yg. ad. ♀	20 $\frac{4}{5}$	15 $\frac{2}{5}$	5 $\frac{3}{8}$
Salt Range, Ava ;	ad. ♂	22 $\frac{3}{5}$	15 $\frac{3}{8}$	5
" " "	ad. ♂	21 $\frac{1}{2}$	14 $\frac{3}{8}$	5 $\frac{1}{2}$
" " "	ad. ♀	21 $\frac{1}{5}$	13 $\frac{3}{8}$	5—
" " "	ad. ♀	20 $\frac{3}{5}$	14 $\frac{3}{8}$	5 $\frac{2}{8}$
Hissar, Bhattu	ad. ♂	21 $\frac{2}{5}$	14	5 $\frac{2}{8}$
" "	ad. ♀	21 $\frac{4}{5}$	14 $\frac{1}{5}$	5 $\frac{2}{8}$
" "	ad. ♀	19 $\frac{1}{2}$	13 $\frac{1}{5}$	4 $\frac{3}{8}$
Rajputana, Sambhar	ad. ♂	21 $\frac{3}{4}$	(11)	5
Upper Sind, Kashmor	ad. ♀	21 $\frac{3}{8}$	15 $\frac{3}{8}$	5 $\frac{1}{8}$
" " Mirpur	ad. ♀	20	12 $\frac{2}{5}$	4 $\frac{5}{8}$
Sind Tar, Parker	ad. ♀	19	12 $\frac{3}{8}$..
Cutch, Bhuj	ad. ♀	20 $\frac{2}{5}$	13 $\frac{3}{8}$	5 $\frac{1}{8}$
" Nokania	ad. ♀	19—	12 $\frac{2}{5}$	4 $\frac{3}{8}$
Baluchistan, Wadh	ad. ♂	22 $\frac{4}{5}$	17 $\frac{3}{8}$	5 $\frac{1}{2}$
" Mand	ad. ♀	22	16 $\frac{3}{8}$	5 $\frac{2}{8}$
" Khozdar	ad. ♀	22	16 $\frac{3}{8}$	5 $\frac{2}{8}$
" Panjgur	ad. ♀	20	15 $\frac{4}{8}$	5 $\frac{1}{8}$

The ear is only slightly smaller than in *montana*, a trifle under 3 $\frac{1}{2}$ in. on the average.

Two flesh-measured ad. ♂ skins from S. Persia, one from Chahanbar (Hotson), the other from the Karun River, both localities being on the Persian Gulf, have the head and body 23 1/5 and 22 1/5 in. respectively; and three adult ♂ skins from Baghdad (Cox and Cheesman) are 21 1/5 in.

The only recorded weights in English lbs. are as follows:—Kashmor, Upper Sind., ad. ♂ 8 lbs.; Bhuj, Cutch, ad. ♂ 6 $\frac{3}{4}$ lbs.; Ara, Salt Range, 2 ♀ 5 $\frac{1}{4}$ and 4 $\frac{1}{2}$ lbs.

The flesh dimensions show that this race is a little smaller on the average

than *griffithii* and considerably smaller, sex for sex, than *montana*. The weights are also much less than in *montana*.

The skull measurements entered below show a complete overlap in size between *pusilla* and *griffithii*, but a decided inferiority on the average of *pusilla*. One interesting point emerges, namely the comparatively diminutive size of some of the foxes over a considerable area of Upper Sind. The physical conditions of the district must be less favourable to growth than elsewhere; and possibly these small foxes represent a distinct race, for which it might be thought the name *leucopus* was available. But Blyth's localities for *leucopus* were Ferozepore, Ludhiana, Hansi in Hissar, Moulton and Cutch and the foxes in the British Museum from Hissar, from Kashmir in Upper Sind, the nearest locality to Moulton, and from Cutch closely resemble examples from the Salt Range, whence the type of *pusilla* came. The desert foxes of Rajputana are also rather small, intermediate in size between those from the Salt Range and the smallest from Upper Sind.

CRANIAL AND DENTAL MEASUREMENTS OF THE LARGEST AND SMALLEST ♂
AND ♀ SKULLS OF BRITISH INDIAN EXAMPLES OF *V. V. PUSILLA*
ARRANGED ACCORDING TO LOCALITY.

LOCALITY AND SEX	Cond. Bas. Length	Zygom. Width	Postorb. Width	Int. Orb. Width	Max. Width	Upper Cheek Teeth	Mand. Length	pm^4	m^1	m_1
Attock, Campbellpore yg ad. ♀	115	62	21	21	16½	53	87	11	9	12
Salt Range (Oldham) ad. ♂	127	69	17 +	24 +	21	60	96	12	8½	13
" (M. Stuart) old. ♀	108	65	20	21	17½	53	84	10	8	12½
" Ara (Stock- ley) ad. ♂	122	67	23	22	19	55	94	11	8	13
" " " ad. ♀	117	65	21	24	20	56	90	11½	9	13 +
Hissar, Bhattu " ad. ♂	124	65	18	23	19	57	96	11	9	13
" " " ad. ♂	117	65	19	23	20	56	88	12	9	13
" " " ad. ♀	114	61	19	19	18	52	87	11	8	12½
Upper Sind, Kashmir ad. ♂	122	69	20	21	20	58	94	12½	9	14
" " Wahi Pandi ad. ♂	110	63	21	23	18	51	...	11	8	...
" " Khairpur ad. ♂	108	60	19	21	18-	49	82	10	8 +	13
" " Rohri ad. ♀?	105	61	22	20	17½	50	80	11	8	12½
" " " ad. ♀?	102	59	19	20	17	48	71	10	8	12
Lower Sind, Umarnkot ad. ♂	119	63	19	21 +	18	57	93½	11½	9	13
Cutch, Bhuj ad. ♂	120	65	19	22	18	52	90	10	8	11
Rajputana, Jodhpur ad. ♂	112	59	23	20	18	53	86	9½	8	12
" Sambhar ad. ♂	117	68	21	24	18½	54	90	10½	8	12
" " " ad. ♀	111	61	23	20	18	52	85	11	8	12
Baluchistan, Mand ad. ♂	125	(64 ±)	...	25	20½	60	96	11	9	13
" " " ad. ♀	110	60	18½	21	17	54½	83	11	8	12 +
" " Wadh ad. ♂	115	65	20	22	17½	53	...	11 +	8	...
" " Khozdar ad. ♀	123	65	19	21	18½	56	...	11	8	...
" " Panjgur ad. ♀	113	...	23	20	18-	55	86	12	8½	13

Vulpes bengalensis, Shaw.

THE BENGAL FOX.

Canis bengalensis, Shaw, *Gen. Zool.*, vol. i, p. 330 (1800).

Canis kokree, Sykes, *Proc. Zool. Soc.*, p. 101 (1831).

Canis (Vulpes) indicus, Hodgson, *As. Res.*, vol. xviii, pt. 2, p. 237 (1833), (*nom. preocc.*).

Canis (Vulpes) rufescens, Gray in Hardwicke's *Illustr. Ind. Zool.*, pt. 2, pl. 3 (1833-4).

Canis chrysurus, Gray, *Charlesw. Mag. Nat. Hist.*, vol. i, p. 577 (1837).

Vulpes hodgsonii, Gray, *Charlesw. Mag. Nat. Hist.*, vol. i, p. 578 (1837).

Vulpes xanthura, Gray, *Proc. Zool. Soc.* (1837), p. 68 (published January 22, 1838; see *Proc. Zool. Soc.*, 1893, p. 437).

Vulpes bengalensis of all recent authors.

Locality of types of *bengalensis* (from Pennant), Bengal; of *kokree*, Deccan; of *indicus*, India; of *rufescens*, India; of *chrysurus*, *hodgsonii* and *xanthura*, Nepal.

Distribution: The whole of India from the foothills of the Himalayas, up to 4,500 ft. at Kangra, to Cape Comorin and from Sind to Eastern Bengal (Bihar and Orissa) and even to Assam according to Blanford.

Distinguished from *Vulpes vulpes* by the black tip of the tail, by the ears being the same tint as the nape or, when darker, never exhibiting the blackness characteristic of that species, by the presence of only two pairs of mammae instead of three, by the shorter, less luxuriant winter coat and the finer, closer pale speckling of the dorsal pelage. The size on the average is nearly the same as in *V. v. pusilla*; but the tail and hind foot are a trifle shorter. It is doubtful if there is any constant difference between the skulls of *V. bengalensis* and *V. v. pusilla*. They are frequently very difficult to distinguish; but the teeth of *bengalensis* are on the average smaller, the difference being more apparent to the eye than when expressed in millimetres, and the nasals are usually broader in their posterior part.

Notes on the synonymy: The fox described by Pennant as the 'Bengal Fox', which Shaw named *bengalensis*, was probably exported from Calcutta. Its locality may be fixed as the adjoining area of India, south of the Ganges. There was no precise locality for the type of *kokree* and no character to distinguish it from *bengalensis* was given. The type, ticketed the Deccan, is in the British Museum. Hodgson recorded *indicus* as occurring over the greater part of India. The type in the British Museum has no locality, but since the name was preoccupied for the Indian Jackal, the locality is of no moment. The next name *rufescens* similarly cannot be assigned to the fox of any definite locality. Hardwicke's illustration, which is the type, indicates a specimen which had moulted the black and white contour hairs and was tolerably uniformly fulvous. The names *chrysurus* and *xanthura* were given by Gray to the same specimen, a fox collected by Cobbe in Nepal. The type is in the British Museum, the skin labelled *chrysurus*, the skull *xanthura*. The type of *hodgsonii* also came from Nepal.

Colour of the dorsal surface very variable according to the condition of the pelage. When the coat is fresh and unfaded the dorsal surface and flanks are everywhere speckled with the whitish bands in the contour hairs, but the crown and the back behind the shoulders are brownish, ochreous or buff, owing to the summit of the wool and a small area between the black tip and the white band of the contour hairs being one of those tints; but these tints are absent on the flanks, which are greyish and speckled, and mostly on the nape which is typically thus contrasted with the back and crown; the muzzle is darkish but there is usually a greyish black smudge in front of the eye; the throat is white, the chin sometimes fuscous, and there is often a fuscous collar on the hind throat and a good deal of buff on the fore breast and axillae; the belly is white but the base of the tail below, the anal and genital areas and the backs of the thighs to the hocks are ochreous or rufous; the hind leg in front below the hock is whitish or some pale shade and the fore leg is rufous from the elbow externally, but greyish with a varying amount of black

down the front usually to the wrist; the tail is mostly darkish grey owing to the black and white contour hairs which form a good brush, the black being dominant at the end to form the black tip. When the pelage is in moult or approaching it and the hairs are dead or dying the characteristic colouring described above fades away.

Although the large number of specimens collected by the Mammal Survey suggests that this species may be represented by a few local races, as might be expected from its wide distribution and varied environment, the insufficiency of series of skins collected at the same time of the year in different localities and the considerable individual variation in skins and skulls from the same locality make the definition of local races impossible for the present. If further material shows they can be established, *kokree* will come in for the Southern Deccan form, *chrysurus* for the Northern Nepalese form and *bengalensis* itself for the form from the central plains of India south of the Ganges.

Some individual and seasonal variations in the species may be shown by brief reference to a few of the skins collected for the Survey in the principal districts.

Bahgownie in Darbangha, 150 ft. Ten skins collected by Baptista between July 29th and October 21st. No two are quite alike in every respect, the extremes being collected on consecutive days, July 29 and 30. One, July 30, is a dark fox with the brown of the crown and back conspicuously speckled with black and buff, the flanks grey, speckled with black and white; the chin and throat white, a blackish collar on the hind throat, breast buffy, and abdomen whitish; inguinal region and back of thighs deep brown; hind leg below hock in front whitish, with the paw dusky; fore leg deep brown above externally, speckled black and grey down front. The other, July 29, is in poorer coat and much paler, with the contour hairs more scanty, so that the black and white speckling is much less in evidence; below the hind throat has hardly a trace of the collar, the breast is much paler buff; the inguinal area and the legs are rusty ochreous rather than brown and there is less pigmentation down the front of the fore leg. The remaining specimens are in varying degrees intermediate between these two.

Haldibari, just south of Sikkim (Crump), an adult ♀, April 13th, is moulting, the coat being thin on the body and tail and bleached so that the colour is a little paler than the palest skin from Darbangha; the belly is nearly naked in preparation for suckling.

Kangra. An adult ♀ collected by H. Whistler at Hamirpur, 2,000 ft., is undated, but evidently in winter coat, which is full, and soft and 37 mm. long; the general colour is very much as in the darkest of the skins from Darbangha. Another ♀ from the Kangra Valley (Wells), 2,000 ft., March 28th, has the same coat but is rather paler than Whistler's skin, with the black hair still less abundant, the collar smaller, the breast less richly buff, the inguinal region and back to the thighs paler ochreous and the fore leg with much less black down the front. A third ♀ from Gopalpur, 4,500 ft. (Wells) March 13th, is like the last in colour below and on the legs, but the coat is not so full as in either of the others, despite the greater altitude, and the colour of the back is yellower and less speckled with black and white.

Gwalior. A series collected by Ryley O'Brien at Binganj, October-November, consists of mostly darkish, rich coloured skins tolerably closely resembling the darkest skins from Kangra and Darbangha but with the coat, owing to the season, fuller and longer than in the latter.

Sind (S. H. Prater). An ad. ♂ from Gangra Mithi Tal, Thar Parkar, October 4th, agrees in colouration with the average of the series from Darbangha. An ad. ♂ and ♀ from Mirpur in Sukkur, March 26th and 27th, are in moult and faded, showing only a pale buffy wash on the fore quarters and a more ochreous tint on the rump, the flanks are pale grey or dirty white, and there is little speckling on the fore legs. The ♀ which was suckling has the abdomen covered with short red hair. A ♀ from Khot Diji in Khairpur, April 10th, although in better coat is a close match of the two Sukkur skins. Another ♀ from Gambat in Khairpur, April 15th, has hardly a trace of buff or ochreous above, merely a faint wash on the hind back but the dorsal surface and flanks are darker than in the other March and April skins from Sind owing to there being more black in the contour hairs.

Deccan. Dharwar, 2,500 ft. (Shortridge). An ad. ♀, January 8th, in good

coat, about 30 mm. long, has an ochreous wash down the back, spangled with white but with no black tips to the contour hairs, so that the dorsal colouration is paler than usual; the ears, however, are exceptionally dark and more strongly contrasted with the head and nape than is normally the case; there is a small darkish collar on the hind throat and some ochreous on the breast. This specimen has the belly moulted for suckling, a condition which in more northern specimens occurs later, at the end of March or beginning of April. An ad. ♂ from the same locality, 1,900 ft., December 21st, is very like the ♀ but has some black speckling in the coat.

Kurnool (Baptista). An ad. ♂ from Diguvameta, April 25th, has a thin short faded coat of dead hair with no wool and a pale grey sepia wash, speckled with buff, on the back. An ad. ♀ from Malakondapenta, May 19th, also has a thin short coat with no wool, but a brownish wash on the back and the shoulders and nape speckled black and white.

High Wavy Mountain in Madura, near the borders of Travancore (S. H. Prater). Two, June 8th, are in faded, thin summer coat, showing no distinctive characters. They are worth recording as the most southern examples of the species procured by the Survey.

Flesh measurements in English inches of the largest and smallest ♂ and ♀ specimens, where known, from the principal districts, are as follows:—

		Head and Body	Tail	Hind foot
Darbangha	ad. ♂	21 $\frac{1}{2}$	11 $\frac{3}{8}$	5
"	ad. ♂	20 $\frac{3}{8}$	10 $\frac{1}{2}$...
"	ad. ♀	20	10 $\frac{3}{8}$	4 $\frac{1}{2}$
Kumaon	ad. ♂	20 $\frac{3}{8}$	11 $\frac{1}{2}$	4 $\frac{1}{2}$
"	ad. ♂	19 $\frac{3}{8}$	11 $\frac{1}{2}$	4 $\frac{3}{8}$
Kangra	ad. ♀	23 $\frac{3}{8}$	11 $\frac{3}{8}$	4 $\frac{1}{2}$
Gwalior	ad. ♂	24 $\frac{1}{2}$	12 $\frac{1}{2}$	4 $\frac{3}{8}$
"	ad. ♂	21 $\frac{3}{8}$	11 $\frac{1}{2}$	4 $\frac{3}{8}$
"	ad. ♂	22 $\frac{3}{8}$	13	4 $\frac{3}{8}$
Sind, Thar Parkar	ad. ♀	19 $\frac{3}{8}$	12 $\frac{1}{2}$...
" Mirpur, Sukkur	ad. ♂	17 $\frac{3}{4}$	9 $\frac{1}{4}$	4
" " "	ad. ♀	18 $\frac{3}{8}$	11 $\frac{1}{2}$	4 $\frac{3}{8}$
" Gambat, Khairpur	ad. ♀	19 $\frac{3}{8}$	11 $\frac{3}{8}$	4 $\frac{3}{8}$
Deccan, Kurnool	ad. ♂	19 $\frac{3}{8}$	12	4 $\frac{1}{2}$
" "	ad. ♀	20 $\frac{3}{8}$	12	4 $\frac{1}{2}$
" Dharwar	ad. ♂	20 $\frac{1}{2}$	12	4 $\frac{3}{8}$
" "	ad. ♀	20	14	4 $\frac{1}{2}$

The average length of the ear is 3 in.

The weight is from about 6 to 8 lbs. in adult males.

The measurements are on the whole tolerably uniform throughout the range of the species, although the single measured specimen from Kangra and the specimens from Gwalior, of which only the largest and smallest males are entered, appear to be larger than those from other districts. But since this is not borne out by any superiority in the size of the skulls, I suspect it is due to the 'personal equation' of the collectors. The exceptionally small adult ♂ from Mirpur, in Sind, is referred to below under the skulls.

SKULL MEASUREMENTS OF THE LARGEST AND SMALLEST ADULT ♂ AND ♀ SPECIMENS, WHERE KNOWN, FROM EACH OF THE PRINCIPAL DISTRICTS.

LOCALITY AND SEX			Cond. Bas. Length	Zygom. Width	Postorb. Width	Int. Orb. Width	Max. Width	Upper Cheek Teeth:	Mand. Length	pm^4	m^1	m_1
Nepal (<i>chrysurus</i> type)												
	ad.	♂	(117 ±)	68	18	22	20	52	90	10	$8\frac{1}{2} \times 10\frac{1}{2}$	$11\frac{1}{2}$
	ad.	♀	110	63	22	21	21	49	...	9	8×10	...
Darbhanga												
	ad.	♂	117	68	20	23	19	51	91	$9\frac{1}{2}$	8×11	11
	ad.	♀	116	69	21	24	20	53	89	9+	8×11	11
	ad.	♂	110	65	20	21	$17\frac{1}{2}$	49	84	9	$8 \times 10\frac{1}{2}$	11
	ad.	♀	104	59	20	20	18	47	80	9	8×10	11
Kumaon												
	ad.	♂	114	66	19	23	$18\frac{1}{2}$	52	90	10	8×11	12-
	ad.	♀	106	60	20	20	18	48-	$80\frac{1}{2}$	9	8×10	11
	ad.	♂	109-	63	22	23	18	50	85	10-	8×11	12
Kangra, Gopalpur												
	old.	♀	111	64	20	21	17	50	87	9	7×9	10
" Hamirpur												
	old.	♀	108	62	20	19	19	48	82	10	$8\frac{1}{2} \times 12$	12
	old.	♀	103	57	21	19	17	46	76	$9\frac{1}{2}$	8×10	11-
Gwalior, Binganj												
	ad.	♂	115	65	22	23	19	52	87	9	8×10	$10\frac{1}{2}$
	ad.	♀	108	62	20	20	17	50	82	9	$7\frac{1}{2} \times 9\frac{1}{2}$	11-
	ad.	♂	110	58	18	18	16	51	83	10	8×10	11
Sind, Thar Parkar												
	ad.	♂	(111 ±)	64	21	22	18	50	84	9	$8 \times 9\frac{1}{2}$	11
" Mirpur, Sukkur												
	ad.	♂	92	59	20	19	16	40	70	8	$6 \times 8\frac{1}{2}$	10
	ad.	♀	105	60	19	20	18	47	80	9	7×9	10
	ad.	♂	102	57	18	18	$15\frac{1}{2}$	46	76	9	7×9	10
	ad.	♀	100	56	19	18	15	46	76	9-	$8 \times 9\frac{1}{2}$	$10\frac{1}{2}$
Deccan (<i>kokree</i> type)												
	ad.	♀	103	53	20	19	16	46	79	9	7×9	10
	ad.	♂	110	61	20	20	17	52	85	10	8×10	$10\frac{1}{2}$
	ad.	♀	115	$61\frac{1}{2}$	19	20	17	...	89	10-	$8\frac{1}{2} \times 10$	11-
" Palkonda Hills												
	ad.	♀	108	$57\frac{1}{2}$	19	19	17	50	84	$9\frac{1}{2}$	8×10	10
	ad.	♂	(117 ±)	62	19	18	$16\frac{1}{2}$	50	86	9	8×10	11
	ad.	♀	107	61	19	19	$16\frac{1}{2}$	49	...	9	8×10	...

Two facts connected with this table stand out as particularly instructive instances of individual variation in the skulls of this fox. The first is the difference in the size of the teeth exhibited by the two ♀ skulls from Gopalpur and Hamirpur in Kangra. Both are old with the teeth about equally worn, yet the first upper molar (m^1) of the skull from Hamirpur, collected by Mr. H. Whistler, is wider than the same tooth in any other skull of the species I have seen. In the Gopalpur skull, on the contrary, that tooth is rather exceptionally small. Its lower carnassial (m_1) also is considerably smaller than in the skull from Hamirpur. In the third ♀ Kangra skull the teeth are about average in size and intermediate between the other two.

The second point is the exceptionally small size of the ad. ♂ skull from Mirpur, Sukkur in Sind. It is hardly longer in condylobasal length than Blanford's Fox (*V. cana*) from Baluchistan, although much more robust, and is much shorter than the ♀ skull from Mirpur collected at the same time by S. H. Prater. The ♂ skull must be regarded as that of a dwarf,¹ and

¹ It will be remembered that some of the skulls of *V. vulpes pusilla* from Sind are exceptionally small.

the dwarfing has affected the upper carnassial (pm^1) and the first upper molar (m^1) as well. The other ♂ skull from Sind, from Thar Parkar, has an estimated condylobasal length of 111 mm. which is the same as the average of 5 ♂ skulls from Gwalior, and of 6 ♂ skulls from Kumaon, but the average of 4 ♂ skulls from Darbhanga is 116 mm.

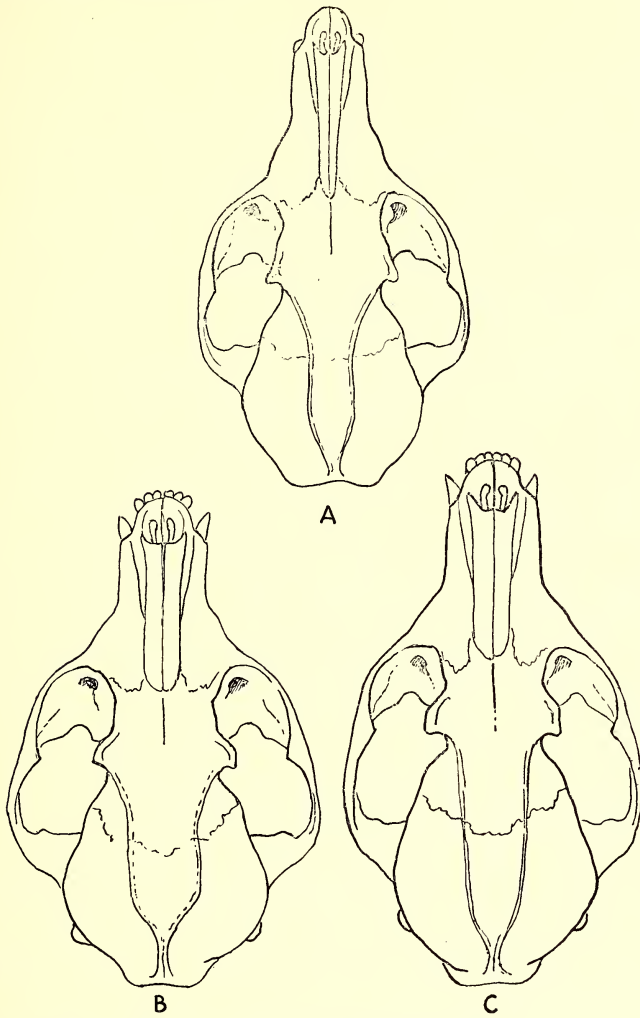


Fig. 2.—A. Skull of type of *Vulpes cana* from Gwadar.
 B. Skull of dwarf ♂ of *Vulpes bengalensis* from Sukkur, Sind.
 C. Skull of normal ♀ of *Vulpes bengalensis* from Sukkur, Sind.
 All $\times \frac{1}{3}$.

Vulpes cana, Blanf.

BLANFORD'S FOX.

'The Small Afghan Fox of Griffith', quoted but wrongly identified by Blyth, *Journ., As. Soc. Beng.*, vol. xiv, p. 344 (footnote) (1845).

Vulpes canus, Blanford, *Journ., As. Soc. Beng.*, vol. xlvi, pt. 2, p. 321 (1877); Sclater and Alston, *Proc. Zool. Soc.*, p. 392 (1878).

Vulpes cana, Blanford, *Mamm. Brit. Ind.*, p. 150 (1888); Ognev, *Ann. Mus. Nat. Hung.*, vol. xxiii, p. 238 (1926).

Vulpes cana var. *nigricans*, Shitkow, *Zool. Anz.*, vol. xxxii, p. 448 (1907).

Locality of the type of cana, Gwadar, Baluchistan; of *nigricans*, Bokhara in Turkestan.

Distribution: Baluchistan, Afghanistan, N.-E. Persia (Khorassan) and Turkestan.

Distinguished from *V. bengalensis* by its smaller size, much fuller, softer and more luxuriant winter coat and by its very different colouration; the coat when fresh exhibiting on the back none of the black and ochreous or buff or white close speckling characteristic of *bengalensis*. The contour hairs of the back, which vary from 45 to 65 mm. in length, have an extensive black tip and an extensive silvery subapical band; the thick wool, varying from 35 to 45 mm. in length, may be grey or lighter or darker ochreous at its summit; the muzzle is darkish, with a conspicuous black smudge in front of the eyes; the crown and cheeks to a varying extent silvery; the ears blackish grey; the flanks and under side are mostly white, but the chin may be blackish and there may be some infuscation on the hind throat and some buff on the breast; the tail is mostly grey, overcast with the extensive blackness of the tips of the contour hairs ranging from 65 to 90 mm. long and forming a voluminous black-tipped brush; the legs are mostly darkish grey, with some black, the ends of the digits are whitish, but sometimes the legs have no black and are mostly ochreous and cream.

There are four skins of this species in the British Museum. An ad. ♂ collected by Sir J. E. B. Hotson at Turbat, Kech, Baluchistan, on December 13th, has the summit of the wool of the back grey, with an ochreous wash in it on the nape; the legs are blackish grey; the forehead and cheeks silvery. Blanford's type taken 15 miles from Gwadar, near Kelat, Baluchistan, differs in having a faint ochreous wash down the back, which is more silvery, less overcast with black; the legs paler grey and the forehead and cheeks less silvered. A skin from Kandahar, Afghanistan, has a richer ochreous wash down the back than the type. A skin bought in Peshawar and said to have come from Bezaur, N.-W. F. P., is still more richly ochreous on the back than the Kandahar skin, and the legs are very pale, the fore leg being creamy grey down the front, ochreous behind and the hind leg ochreous above the hock, instead of grey, and in front below the hock cream (the paws are missing).

The specimen collected at Turbat is the only one of the series measured in the flesh:—head and body, 16 in.; tail, —;¹ hind foot, 4 in.; ear, 3½ in. It may be noted that the ear is almost as long as the hind foot and is actually as long and therefore relatively considerably longer than in *bengalensis*.

The skull has the general shape of that of *bengalensis* but is smaller and, judging from the two examined, is muscularly less well developed, the temporal ridges forming a wide lyriform area. The carnassial teeth also are relatively larger. As the measurements show these teeth (pm^4 and m_1) are as large as in the biggest skulls of *bengalensis* and actually larger than in the smallest dwarfed ♂ skull of this species from Mirpur in Sind. The first upper molar (m^1) is also a trifle larger than in that skull and very nearly if not quite the average size of other skulls. But a comparison between the general dimensions of the dwarf ♂ skull of *bengalensis* from Mirpur and the two of *cana* shows that although they are all of approximately the same condylobasal length, the *bengalensis* skull is more strongly developed, being broader across the zygomata and across the muzzle at the canines. A noticeable individual difference between the two skulls of *cana* is seen in the nasals which in the skull from Turbat are exceedingly narrow behind whereas in the type they are broader, although not so broad as in the average of *bengalensis*.

¹ Hotson gave the tail as 135 mm. (= 5 2/5 in.), but half of it is missing. In other made-up skins the tail is at least two-thirds the length of the head and body.

***Vulpes ferrilata*, Hodgson.**

THE TIBETAN DESERT FOX.

Vulpes ferrilatus, Hodgson, *Journ., As. Soc. Bengal*, vol. xi, p. 278, pl. (1842); Blanford, *Mamm. Brit. Ind.*, p. 155 (1888); Bonhote, *Proc. Zool. Soc.*, p. 303, fig. (skull) (1905).

? *Canis eckloni*, Przjevalski, *Third Journ., Centr. Asia*, p. 193 (1883), (*nom. nud.*)¹

? *Alopex eckloni*, Matschie in Filchner's *Exped. China and Tibet, Zool.*, p. 171 (1907).

Locality of type of ferrilatus, near Lhasa; of *eckloni*, Mongolia.

Distribution: Tibet, Nepal and the Upper Sutlej Valley.

Hodgson's skins from Nepal and a living example from that country exhibited in the Zoological Gardens, all referred to below, may have been brought to Nepal from Tibet. Stoliczka's record of the species from the Upper Sutlej (*Journ., As. Soc. Beng.*, xxxvii, pt. 2, p. 5) may be due to an erroneous identification of a specimen of *V. vulpes montana*, although it was associated with some typical Tibetan species.

Distinguished from the previously described species by its relatively much smaller ears, its shorter tail, its very thick but comparatively short and rather wavy winter coat and by several striking differences in the skull and teeth. Coat consisting of an intimate mixture of the contour hairs, which have a pallid subapical band, and the wool, the two being approximately equal in length and varying in length from about 25 to 40 mm., no doubt in accordance with the winter date; but interspersed in this coat, sometimes very sparsely, sometimes tolerably abundantly, are numbers of longer, fine black hairs up to 50 mm. or more in length. General colour above from the head on to the root of the tail ochreous from the tint of the tips of the contour hairs and the summit of the wool, speckled by the pallid areas of the contour hairs but hardly appreciably darkened by the long erect black hairs; the head often not so bright, greyer; the muzzle with no trace of a fuscous patch in front of the eye; the ears not sharply contrasted with the nape, but sometimes a little darker; a clear buff patch behind the ear. Sides of the neck, flanks and thighs hoary; tail dark grey, mixed black and white sometimes with a buffy tinge above; the tip extensively white; hind leg ochreous above the hock and down the back of the metatarsus; white in front below the hock; fore leg from the elbow ochreous, or palish buff with white paws and sometimes a fuscous patch on the wrist; upper lip, chin and the rest of the under side white, with the white of the hind throat set off on each side by a large fuscous patch.

This description is taken from six specimens in good coat, namely a recently received, mounted specimen from Tibet (R. Ward); two lectotypes from Lhasa (Hodgson), one from Eastern Central Tibet (Thorold) and two ticketed Nepal (Hodgson). Two younger skins, ticketed Nepal (Hodgson), are paler, either greyer or buffier than the rest, not so ochreous. But a skin from the Karo La Pass, 16,600 ft. is in full moult and differently coloured. Most of the contour hairs of the back are shed, those that remain having

¹ This name was given by Przjevalski apparently to the Steppe Fox he identified as *Canis corsac* in 1875 in his *Mongolia and the Land of the Tongouts*. According to Delmar Morgan's translation of this work, vol. ii, p. 211, 1876, Przjevalski referred to this fox as occurring over the whole of Mongolia, Kansu, Kokonor and Tsaidan, being especially plentiful in the plains round Kokonor. But he secured no specimen and merely recorded what he knew of its habits; and no description was given when he altered the determination and named the fox *Canis eckloni*. I should not have quoted the name in this connection but for the reference to it as *Vulpes ferrilatus eckloni* by Ognev, who presumably took his opinion from Matschie's identification of *eckloni* and his comparison of it with *ferrilatus*. Matschie, however, assigned *eckloni* to the genus *Alopex* of which the type is *lagopus*, and *corsac* has a good deal of resemblance to *lagopus* in skull characters. On the other hand in the whole Vulpine series of species it would be impossible to find two with the skulls more different than *lagopus* and *ferrilata*.

dead shrivelled tips; the wool is close and matted, about 25 mm.; the general colour is browner, not so ochreous and is conspicuously more blackened by the long black hairs; the tail has no contour hairs but is covered with soiled, felted wool.

None of the above described skins is dated or was measured in the flesh; but the following are the dimensions in English inches of the specimen mounted by Rowland Ward; head and body, $26\frac{1}{2}$ in.; tail, $11\frac{1}{4}$ in.; hind foot, 5 in.; ear, $2\frac{1}{5}$ in. The ear of the skin from the Karo La Pass, when softened, was 3 mm. longer.

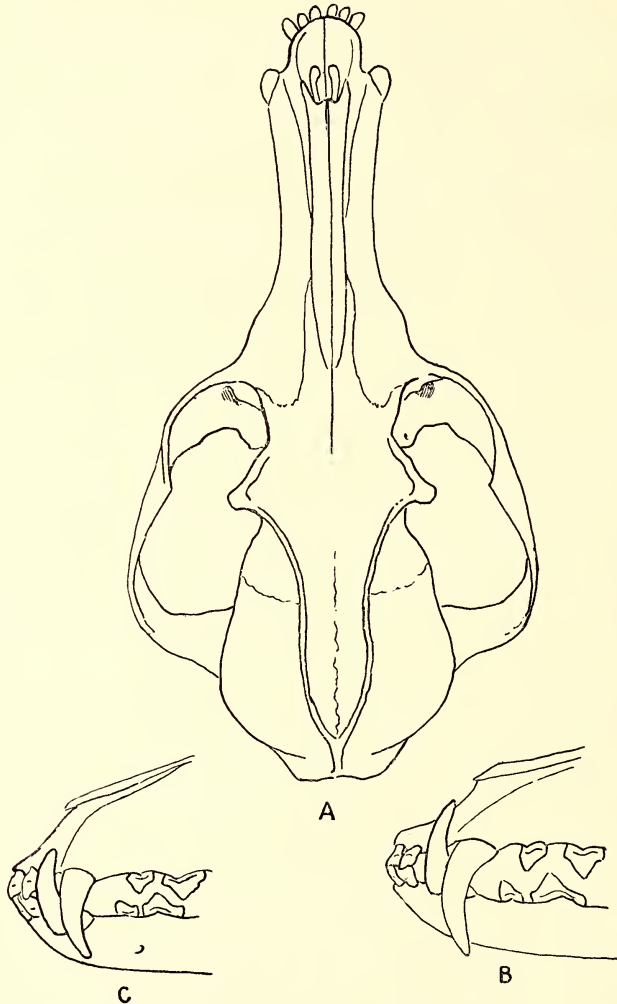


Fig. 3.—A. Skull of ad. ♂ of *Vulpes ferrilata* from Karo La Pass, Tibet.
 B. Front end of jaws of the same from Gyang-tse, Tibet.
 C. The same of *Vulpes vulpes montana* from Takula, Kumaon.

Incidentally these measurements disprove Blanford's statement that *V. ferrilata* is considerably less in size than *V. vulpes montana*; but they show that the tail, without the hair, is less than half the length of the head and body, instead of over, and that the ear is about 1 in. or more lower. These differences also distinguish *V. ferrilata* from *V. bengalensis* and *V. cana*.

The very remarkable skull of this fox, which in its development is an extreme exaggeration of the Vulpine type, was unknown to Blanford and was first described by Bonhote who pointed out many of its peculiarities. The skull is longer in its condylobasal length, and in the length of the mandible and of the upper cheek-teeth than any of the skulls of *V. v. montana* I have seen; but the difference is due to the exceptional length of the jaws, the cranial portion, although it has rather wider zygomata, being actually shorter on the average. The jaws, however, are not only longer but narrower, being actually narrower by about 3 mm. above the second premolar than in a large skull of *montana*, but they expand above the canines where the width is about the same as in *montana*. The forehead is concave from side to side owing to the uplift of the postorbital processes. There are also differences in the teeth, the most noticeable being the extreme length of the canines in *ferrilata* in which the upper canine, when fully erupted and unworn, is 5 mm. longer down its anterior edge than the corresponding tooth in *montana*.¹ The lower canine is similarly higher and the upper premolars (pm^1 to pm^2) and the lower premolars (pm_1 to pm_2) are longer from back to front; but whereas the upper carnassial (pm^4) and the lower carnassial (m_1) are subequal to those of *montana*, the first upper molar (m^1) of *ferrilata* is smaller. From these differences it results that in *ferrilata* the height of the upper canine exceeds the combined lengths of the upper carnassial and the first molar, as set in the jaw, and that the third upper premolar is longer than the first molar. In *montana*, on the contrary, the canine is much less than the other two teeth and the third upper premolar is shorter than the first upper molar.

CRANIAL AND DENTAL MEASUREMENTS OF THE AVAILABLE SKULLS OF
VULPES CANA AND *VULPES FERRILATA*.

NAME, LOCALITY AND SEX	Cond. Bas. Length	Zygom. Width	Postorb. Width	Int. Orb. Width	Max. Width	Upper Cheek Teeth	Mand. Length	pm^*	m^1	m_1
<i>Vulpes cana</i>										
Turbat, Baluchistan										
ad. ♂	91	50	$19\frac{1}{2}$	18	13	$43\frac{1}{2}$	69	10	$7\frac{1}{2} \times 10$	11
Gwadar, ,,	89	$50\frac{1}{2}$	18	19	13	$41\frac{1}{2}$	67	$9\frac{1}{2}$	$6\frac{1}{2} \times 9$	11
<i>Vulpes ferrilata</i>										
(Nepal)										
ad. ♂	152	86	$24\frac{1}{2}$	27	25	75	124	13	$8\frac{1}{2} \times 12$	16-
Tibet, Karo La Pass	145	83	26	24	23	75	118	13	$8\frac{1}{2} \times 11$	15
,, Gyantse	145	82	24-	24	25	70	116	$13\frac{1}{2}$	$7\frac{1}{2} \times 12$	15
,, E. Central										
yg. ad.	144	(72±)	$22\frac{1}{2}$	21	22	71	115	13	8 × 12	$14\frac{1}{2}$

Of the skulls of *ferrilata* entered on this list the first bracketed Nepal came from a living specimen presented by the Maharajah of Nepal to the present King Edward, when Prince of Wales. It has no skin and its locality is doubtful. The one from the Karo La Pass, collected by Col. Waddell, was figured and described by Bonhote. The one from Gyantse, which has no skin, was received from Col. F. M. Bailey and the one from E. Central Tibet was presented by Mr. W. Thorold.

¹ Bonhote recorded the canine of the skull from the Karo La Pass as 29 mm. and that of his type of *waddelli* as 20 mm. The latter is correct; but the former number is a misprint for 25.